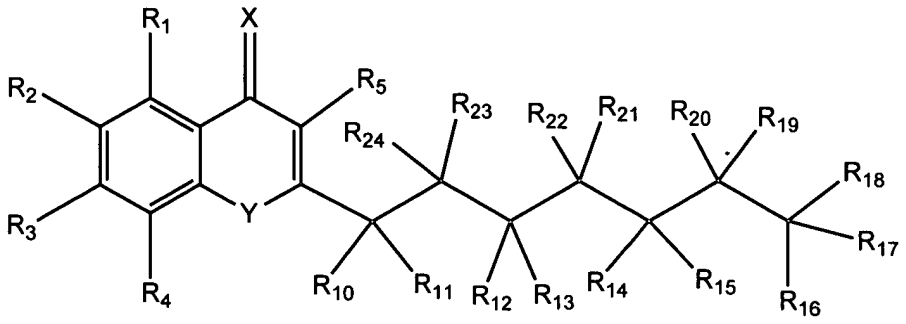
APPENDIX B
PENDING CLAIMS

1. (Twice Amended) A compound of formula I

(I) 

wherein:

R_1-R_4 are independently H, alkyl, alkenyl, alkynyl, OH, NH_2, SH, O-R_6, N-R_7R_8, or a halogen;

R_5 is SH, OH, O-R_6, or N-R_7R_8;

R_6 is C_1-C_4 alkyl;

R_7 and R_8 are independently H, C_1-C_4 alkyl, O, or S;

X is S, O, or N-R_9;

Y is N-R_9;

R_9 is H, O, S, or C_1-C_4 alkyl;

R_{10}-R_{13} are independently H, C_1-C_4 alkyl, OH, NH_2, SH, O-R_{25}, N-$R_{26}R_{27}$, or a halogen, or R_{10} and R_{11} taken together form a carbonyl, a sulfonyl or an imino moiety, or R_{12} and R_{13} taken together form a carbonyl, a sulfonyl or an imino moiety;

R_{14}-R_{24} are independently H, C_1-C_4 alkyl, OH, NH_2, SH, O-R_{25}, N-$R_{26}R_{27}$, or a halogen;

R_{25} is H or C_1-C_4 alkyl; and

R_{26} and R_{27} are independently H, C_1-C_4 alkyl, O, or S; and

salts thereof.

3. (Amended) The compound of claim 1 that is different than 2-heptyl-3-hydroxy-4-quinolone.

4. (Amended) The compound of claim 1, wherein R_{16}, R_{17}, and R_{18} are H.

5. (Amended) The compound of claim 1, wherein R_2 is halogen.

6. (Amended) The compound of claim 1, wherein R_3 is halogen.

7. (Amended) The compound of claim 1, wherein R_4 is halogen.

8. (Amended) The compound of claim 1, wherein X is S or N-R_9.

9. (Twice Amended) The compound of claim 1, wherein Y is N-R_9 and wherein R_9 is C_1-C_4 - alkyl.

10. (Twice Amended) The compound of claim 1, wherein R_5 is SH, O-R_6, or N-R_7R_8, and wherein R_6 is C_1-C_4 alkyl.

11. (Amended) The compound of claim 1, wherein R_5 is SH, O-R_6, or N-R_7R_8.

12. (Amended) The compound of claim 1, wherein X is O.

13. The compound of claim 12, wherein R_5 is OH and Y is N-R_9.

14. The compound of claim 1, wherein Q is an alkylene chain having a skeleton of three to twenty carbon atoms.

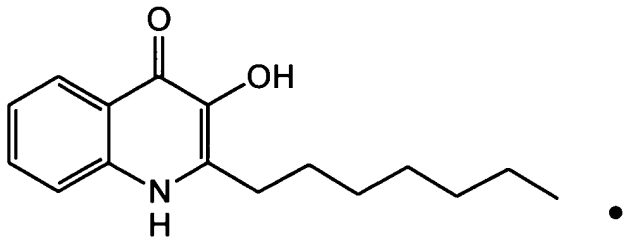
15. The compound of claim 14, wherein the alkylene chain contains one or more double bonds or triple bonds between the carbon atoms forming the skeleton alkylene side chain.

16. The compound of claim 14, wherein one or more carbon atoms forming the skeleton of the alkylene side chain are replaced with sulfur or sulfur-substituted moieties.

17. (Amended) The compound of claim 1, wherein the compound contains a chiral center.

18. (Amended) The compound of claim 1, which is an optically active isomer.

19. (Amended) The compound of claim 1, having the formula II:

(II) 

20. (Amended) A compound of claim 1 or 19, wherein said compound is an autoinducer molecule.

21. (Amended) The compound of claim 20, wherein said compound regulates gene expression.

22. (Amended) The compound of claim 21, wherein said compound regulates gene expression in bacteria.

23. (Amended) The compound of claim 22, wherein said bacteria is *Pseudomonas aeruginosa.*

24. (Amended) The compound of claim 23, wherein said gene expresses a virulence factor.

25. (Amended) The compound of claim 24, wherein the virulence factor is elastase.

26. (Amended) The compound of claim 20, wherein said compound regulates the activity of the LasR protein of *Pseudomonas aeruginosa.*

27. (Amended) The compound of claim 20, wherein said compound regulates the activity of the RhlR protein of *Pseudomonas aeruginosa.*

28. (Amended) The compound of claim 20, wherein said compound is isolated from culture media in which *Pseudomonas aeruginosa* is grown.

29. (Amended) A compound of claim 1, wherein said compound modulates the autoinducer activity of 2-heptyl-3-hydroxy-4-quinolone.

30. The compound of claim 29 that inhibits the autoinducer activity of 2-heptyl-3-hydroxy-4-quinolone.

31. The compound of claim 29 that synergistically enhances the autoinducer activity of 2-heptyl-3-hydroxy-4-quinolone.

32. (Amended) A compound of claim 1, wherein said compound modulates the activity of the LasR and/or the RhlR proteins of *Pseudomonas aeruginosa.*

33. The compound of claim 32 that is an antagonist of the LasR and/or the RhlR proteins of *Pseudomonas aeruginosa.*

34. (Amended) The compound of claim 32 that is an agonist of the LasR and/or the RhlR proteins of *Pseudomonas aeruginosa.*

35. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier therefor, wherein the compound inhibits the activity of one or more proteins in a microorganism that regulate expression of virulence factors.

36. The pharmaceutical composition of claim 35, wherein the compound is present in an amount effective to affect the ability of the microorganism to initially infect or further infect an organism.

37. The pharmaceutical composition of claim 35, wherein the microorganism is *Pseudomonas aeruginosa.*

38. The pharmaceutical composition of claim 37, wherein the compound inhibits the activity of the LasR and/or the RhlR proteins of *Pseudomonas aeruginosa*.

39. The pharmaceutical composition of claim 38, wherein the compound inhibits the autoinducer activity of 2-heptyl-3-hydroxy-4-quinolone.

40. The pharmaceutical composition of claim 35, further comprising an antimicrobial, antibacterial or antifungal agent.

41. A method of inhibiting the infectivity of *Pseudomonas aeruginosa* comprising administering to a subject a therapeutically effective amount of a compound of claim 1, wherein the compound inhibits the activity of the LasR and/or the RhlR proteins of *Pseudomonas aeruginosa*.

42. The method of claim 41, wherein the compound inhibits the autoinducer activity of 2-heptyl-3-hydroxy-4-quinolone.

46. A culture medium for microorganisms comprising, as an added compound, an autoinducer molecule as defined in claim 20, at a concentration effective to stimulate or promote the metabolism, growth and/or recovery of the microorganism.

47. The culture medium of claim 46, wherein the microorganism is *Pseudomonas aeruginosa*.

48. The culture medium of claim 47, wherein the autoinducer is 2-heptyl-3-hydroxy-4-quinolone.